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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,674	05/02/2001	Youfan Gu	16458-056	5385

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IP PATENTS
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EXAMINER

HASSANZADEH, PARVIZ

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,674

Applicant(s)

GU, YOUFAN

Examiner

Parviz Hassanzadeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claim 19 recites the limitation "outer screen" in line 1. There is insufficient antecedent basis for this limitation in the claim. it is suggested to change 10 to 9

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al (US Patent No. 5,820,641) in view of Mann (US Patent No. 4,487,618).

Gu et al teach a fluid trap and a method of using the same for trapping condensable vapor byproducts a from a chemical vapor deposition process or an etching process, wherein the chemical byproduct may include aluminum chloride (AlCl₃) gas (column 1, line 5 through column 2, line 31), wherein the apparatus (Fig. 9) includes at least two trapping stages wherein a majority (95%) of the condensable vapor in the gas byproducts G will be collected or trapped in the first or primary removal stage of tap 30 where a large trapping volume is provided and the remaining (5%) condensable vapor in the gas byproducts G will be tapped and collected in the second or scrubber stage of the tap 33 (column 8, line 66 through column 9, line 33, column 10, lines 7-44). The amount of interior surface area, such as perforated cones 146 or fins 154 or other possible surface configurations which can provide sufficient surface area while not substantially impeding the gas flow, in the second stage of the trap 30 upon which the flowing gas byproducts

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G can directly impact or impinge is preferably quite large (column 16, lines 3-10, column 18, lines 13-32).

Gu et al fail to teach the trapping media having micro-surface areas.

Mann teach a fluid trap (Fig. 2) including multiple stages of 54, 56 and 34 including fiber pad 62, metal wire mesh screen 46 and alternating spiral layers of wire mesh or screen 92, respectively, for further trapping and collecting condensable gas (column 1, line 37 through column 3, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize fiber, wire mesh or screen as taught by Mann in the trap of Gu et al as an alternative means of controlling the extend of trapping in various stages of the trap.

Further regarding claim 3: the apparatus of Gu et al further including a heating device for controlling the temperature of the condensable gas byproducts before entering the trap so that to prevent gas byproducts from cooling, condensing, solidifying and accumulating until the gas byproducts G reach the trap 30 (column 1, line 64 through column 2, line 31, column 6, lines 3-38).

Further regarding claims 4, 5: the cited volume flow rate and the mass flow rate are considered to be within the rage of the gas byproducts in conventional plasma processing system such as that the trap of Gu et al was used for. The distribution of density of the micro-surface trapping material determines the extend of collecting byproducts at various stages of the trap and the selection of appropriate density for various stages of the trap is considered to have been obvious through routine optimization.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 10, 20, 22-24, 26, 36-39 is rejected under 35 U.S.C. 102(b) as being anticipated by Gu et al (US Patent No. 5,820,641).

Gu et al teach a fluid trap and a method of using the same for trapping condensable vapor byproducts a from a chemical vapor deposition process or an etching process, wherein the chemical byproduct may include aluminum chloride (AlCl_3) gas (column 1, line 5 through column 2, line 31), wherein the apparatus (Fig. 9) includes at least two trapping stages wherein a majority (95%) of the condensable vapor in the gas byproducts G will be collected or trapped in the first or primary removal stage of tap 30 where a large trapping volume is provided and the remaining (5%) condensable vapor in the gas byproducts G will be tapped and collected in the second or scrubber stage of the tap 33 (column 8, line 66 through column 9, line 33, column 10, lines 7-44). The amount of interior surface area, such as perforated cones 146 or fins 154 or other possible surface configurations which can provide sufficient surface area while not substantially impeding the gas flow, in the second stage of the trap 30 upon which the flowing gas byproducts G can directly impact or impinge is preferably quite large (column 16, lines 3-10, column 18, lines 13-32). Wherein the gas byproducts cools down while flowing through the trap particularly at the second stage having a cooling mechanism.

Further regarding claims 22, 23: the trap is an elongated cylinder as shown in Fig. 1 which is coupled to the outlet of a process chamber and thus can be disposed of after being used.

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Further regarding claims 10, 20, 36-39: the second stage as shown in Fig. 9 is disposed inside the first stage which have an inlet to be coupled to the outlet of a process chamber and wherein the second stage including perforated tapering cone 146 positioned over a hollow central tube 128 (guide), and as shown in Fig. 9 the cone 146 can be remove from the first stage through a removable base plate 74 (column 18, line 57 through column 19, line 11).

Allowable Subject Matter

Claims 6, 7, 9, 11-19, 21, 25, 27-35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (703)308-2050. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703)308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

P. Hassanzadeh
Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

September 4, 2003